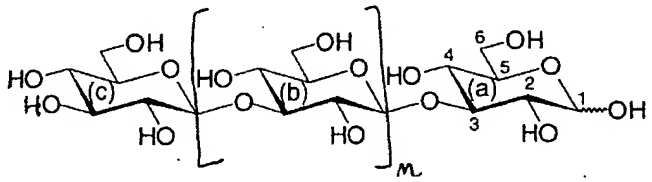
REMARKS

By this amendment, Claim 1 has been amended by combining it with claim 2, so that the method of the invention only covers oligo-β-(1,3)-glucans of formula



in which n=2 or 3,
or a pharmaceutical acceptable salt thereof.

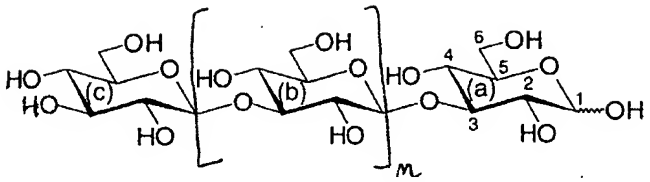
The remaining claims have been renumbered accordingly.

REJECTIONS UNDER 35 USC § 103(a)

Claims 1, 3, 5-7, and 10 stand rejected under 35 USC § 103(a) as being unpatentable over YVIN et al in view of KIM et al. Applicants respectfully traverse this rejection and request reconsideration for the reasons that follow:

The claimed invention is directed to a therapeutical method comprising administration of Laminaritetraose or Laminaripentaose and a pharmaceutically acceptable carrier, to a human being or to a warm-blooded animal suffering from a disease selected from the group consisting in a tumour, a cancer, a viral disease, a bacterial disease, a fungal disease, a disease of the immune system, an auto-immune disease or disease related to a deficiency of immunostimulation in an amount which is effective to treat the disease.

Both, laminaritetraose and laminaripentaose, are short linear oligo-β-(1,3)-glucans having the general formula



in which n=2 for laminaritetraose and n=3 for laminaripentaose.

Example 7 of the application clearly demonstrates that, surprisingly and unexpectedly, the TNF-alpha secretion is higher when using the short-chain oligo-β-(1,3)-glucans laminaritetraose and laminaripentaose instead of laminarin, a poly-β-(1,3)-glucan (see example 7, table 6). Since TNF is associated with in vivo and in vitro killing of tumor cells, example 7 shows that, surprisingly and unexpectedly, laminaritetraose and laminaripentaose have significantly higher anti cancer activity than laminarin.

Yvin et al teaches a drug for treating disorders resulting from apoptosis dysfunction, said drug comprising a linear or branched β-(1,3)-glucan having from 3 to 150 glucose units, preferably from 15 to 30 glucose units. Yvin et al. also teaches that cancer type pathologies imply an apoptosis dysfunction.

However, Yvin et al. fails to teach the specific oligo-β-(1,3)-glucans of claim 1. Furthermore, Yvin et al. does not demonstrate any effect of oligo-β-(1,3)-glucans on disorders resulting from apoptosis dysfunction, since all of the examples relate to galactose oligomers.

Hence the person skilled in the art having knowledge of Yvin et al. would not have expected that the two specific oligo-β-(1,3)-glucans of instant claim 1 have higher anti-cancer activity than long-chain glucans such as laminarin.

Even though Kim et al. teaches the existence of laminaripentaose, the person skilled in the art having knowledge of Yvin et al. would never have expected that this compound would have significantly higher anti-cancer activity than long-chain glucans such as laminarin.

Accordingly claim 1 and its dependent claims are indeed unobvious over Yvin et al. in view of Kim et al., and the Examiner's rejection on the basis of these references is respectfully traversed.

Claims 1, 3-7, and 10 stand rejected under 35 USC § 103(a) as being unpatentable over YVIN et al in view of KIM et al. and further in view of Hillmann et al. Applicants respectfully traverse this rejection and request reconsideration for the reasons that follow:

The teachings of Yvin et al. and Kim et al. are set forth above.

Hillmann et al. teaches that disorders which are associated with decreased apoptosis include cancers of the brain, tongue, colon, bladder, lung, and skull, hormone-dependent cancer including breast, prostate, uterine, testicular, and ovarian cancer, lymphomas and leukemias.

However, even though Hillmann et al. teaches specific types of cancer which are related to apoptosis dysfunction, the person skilled in the art having knowledge of Yvin et al. and Kim et al. would never have been incited to expect that laminaritetraose and laminaripentaose have significantly higher anti cancer activity than long-chain glucans such as laminarin.

Accordingly claim 1 and its dependent claims are indeed unobvious over Yvin et al. in view of Kim et al. and further in view of Hillmann et al., and the Examiner's rejection on the basis of these references is respectfully traversed.

Claims 1, 3, and 5-10 stand rejected under 35 USC § 103(a) as being unpatentable over YVIN et al in view of KIM et al. and further in view of Penney et al. Applicants respectfully traverse this rejection and request reconsideration for the reasons that follow:

The teachings of Yvin et al. and Kim et al. are set forth above.

The fact that Penney at al. teaches the use of immunomodulatory peptides, alone, or in combination with chemotherapeutic agents for the treatment of cancer, would never have incited the person skilled in the art having knowledge of Yvin et al. and Kim et al. to expect that laminaritetraose and laminaripentaose have significantly higher anti cancer activity than long-chain glucans such as laminarin.

Accordingly claim 1 and its dependent claims are indeed unobvious over Yvin et al. in view of Kim et al. and further in view of Penney et al., and the Examiner's rejection on the basis of these references is respectfully traversed.

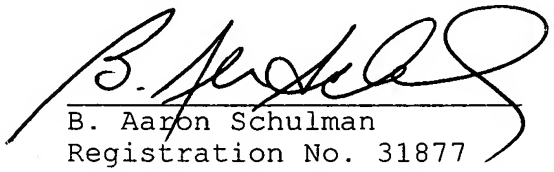
Claims 1, 3-7, and 10 were rejected on the grounds of nonstatutory obviousness-type double patenting on the basis of Claim 14 of U.S. Pat. No. 6,750,208 in view of Kim et al. Without addressing the merits of this rejection, the rejection has become moot by virtue of the filing of a Terminal Disclaimer herewith.

In view of the above, it is considered that the claims in their present form overcome all prior rejections, and that the present amendments and arguments place this application in proper form for allowance.

Favorable consideration and immediate allowance of these claims are thus respectfully requested.

Respectfully submitted,
STITES & HARBISON, PLLC

October 11, 2006



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